Attachment of Electric Vehicle (EV) Chargers to Endeavour Energy poles

Document No. MCI 0009

Amendment No. 0.1

3/06/26

Endeavour Energy

POWER together

Revision History

This amendment replaces the following standard:

MCI 0009 – Attachment of Electric Vehicle (EV) Chargers to Endeavour Energy poles Am 0

Important Disclaimer

As the information contained in this publication is subject to change from time to time, Endeavour Energy gives no warranty that the information is correct or complete at the time of its use or is a definitive statement of procedures.

Endeavour Energy reserves the right to vary the content of this publication as and when required. You should make independent inquiries to satisfy yourself as to the correctness and accuracy of the content. Endeavour Energy is not liable to any persons in respect of anything done or not done by any such person in reliance, whether in whole or in part, on this document.

Copyright

Contact Information

The latest version of this document and other standards, are available on Endeavour Energy's standards website at:

https://www.endeavourenergy.com.au/Working-with-us/Standards-forms-and-guides/Standards

Document Control

Documentation content coordinator: Asset Engineering Manager

Contents

1 Purpose

To set out in detail the requirements for the attachment of Electric Vehicle (EV) Chargers to Endeavour Energy poles.

2 Scope

This standard applies to design and construction of EV Chargers on Endeavour Energy distribution poles by third party charge point owners and/or charge point operators. Additionally, it sets out the ongoing obligations of the charge point owners and/or charge point operators with respect to the maintenance, operation, and repair of EV charger installations .

3 References

External Regulations
Electricity Supply Act 1995 (NSW)
Electricity Supply (Safety and Network Management) Regulation 2014
Gas and Electricity (Consumer Safety) Regulation 2018
ENA NENS 04 – 2006, National Guidelines for Safe Approach Distances to Electrical Apparatus
WorkCover Work Near Overhead Power Lines, Code of Practice 2006
National Electricity Network Safety Code (ENA DOC 001-2019)
Service and Installation Rules for NSW April 2026

External Standards		
Standard No.	Year	Title
AS/NZS 3000	2018	Electrical Installations (known as the Wiring rules)
AS/NZS 7000	2016	Overhead line design

Company Policies and Procedures	
Company Policy 9.6.1	Network Connection
Company Policy 9.6.9	Facilities Access (Shared Infrastructure)
Company Policy 9.7.1	Network Asset Construction
Company Policy (Network) 9.9.1	Network Asset Maintenance
Company Procedure GAM 0037	Network Facilities Access Approval

Company Procedure GAM 0114	Granting Dispensation for Engineering Documents
Division Procedure GNV 1005	Conditions covering the use of elevating work platforms for work on or near the company's network
Division Procedure GNV 1051	Working on Structures with Communications Transmitters
Electrical Safety Authorisations	Authorisations Manual - Electrical & Public Safety (January 2022)
Endeavour Energy Guidelines	Electrical Safety Rules
Endeavour Energy Report	Electricity Network Safety Management Systems (as amended)

Company Standards	
Company Procedure GAM 0114	Granting Dispensation for Engineering Documents
Earthing Design Instruction EDI 001	Earthing Design Risk Assessment
Equipment Technical Specification ETS 0052	Timber Pole Specification
Mains Construction Instruction MCI 0005	Overhead construction standard
Mains Design Instruction MDI 0031	Overhead Line Design

4 Definitions and Abbreviations

Term	Definition
ABC	Aerial bundled cable
ASP	Accredited Service Provider - a company or individual accredited by NSW Department of Planning and Environment - accreditation scheme for service providers to undertake electricity network contestable works (as a minimum Level 2 accreditation is required)
AML	Approved Materials List - a dynamic list of materials and equipment approved (at that point in time) for installation on the electricity network and is available from Endeavour Energy's Standards website. This list details the material description, approved supplier/manufacturer name and associated part number.
Asset Protection Manager	Person assigned by Endeavour Energy to manage the Overhead Line Inspection / Ground Line Inspection contract
Authorised person	A person with technical knowledge or sufficient experience who has been approved, or who has delegated authority to act on behalf of Endeavour Energy, to perform the duty concerned.
BCC	Broadband Communication Cables - these include optical fibre cables and coaxial cables used for the provision of cable television and other information services
CCT	Covered conductor thick

Charge Point Owner	An entity or individual that owns electric vehicle charging infrastructure at a public or private location.
Charge Point Operator (CPO)	A company responsible for the installation, management, operation and maintenance of electric vehicle charging stations.
CNS	Customer Network Solutions
EVCI	Electric vehicle charging infrastructure
EWP	Elevated work platform
Exclusion zone	The safe working distance that must be achieved from an energised radio frequency transmitter, which cannot be entered by any part of the body or metal object.
FAA	Facilities Access Agreement
GIS	Geographic Information System
HV	High Voltage - a voltage normally exceeding 1,000 volts alternating (a.c) or 1,500 volts direct current (d.c)
Instructed person	A person adequately advised by an Authorised Person or who has sufficient training and experience in the safety requirements for the work being undertaken to enable them to avoid the dangers which electricity may create.
LV	Low Voltage - a voltage normally exceeding 50 volts alternating current (a.c) or 120 volts direct current (d.c), but not normally exceeding 1,000 volts alternating (a.c) or 1,500 volts direct current (d.c).
Ordinary person	A person without sufficient training or experience to enable them to avoid the dangers which electricity apparatus may create
SAP	Endeavour Energy's asset management database
SL	Street lighting
UGOH	Underground to overhead transition

5 Actions

5.1 General

It is the responsibility of Charge Point Operators to enter into a Facilities Access Agreement with Endeavour Energy.

The CPO is responsible for the safe design, installation, operation, maintenance, repair, augmentation, alteration and removal of the EV Charger and associated cabling.

The CPO is responsible for all costs associated with the above, including all costs incurred by Endeavour Energy due to the attachment of the EV Charger and associated equipment on its structure.

The CPO has the responsibility to engage with the local council and affected residents about the EV Charger installation on the Endeavour Energy pole. As part of the approval process with Endeavour Energy, the CPO is to submit evidence that council approval has been granted and affected residents consulted.

The CPO shall comply with environmental requirements and obtain all other necessary approvals from relevant authorities such as Transport for NSW or others before proceeding with a connection application to Endeavour Energy.

The supply to the EV Charger is subject to a network connection agreement with Endeavour Energy, as well as an agreement with an electricity retailer.

The location of the network connection shall be recorded in Endeavour Energy's GIS.

5.2 Safety Considerations

Appropriate design, safety, training and risk management practices must be implemented to prevent the exposure of potential hazards to all staff, the community and equipment.

Personnel installing or maintaining EV Chargers must employ safe working procedures to mitigate any risks to public and property. Such procedures must include a voltage test so work can be safely performed.

Personnel working on Endeavour Energy poles within the organisation’s Safe Approach Distances (as defined Endeavour Energy’s Electrical Safety Rules) must be authorised persons (Accredited Services Providers) with appropriate accreditations to the work being proposed.

The CPO must provide the following to the Asset Engineering Manager for approval of the EV Charger installation on Endeavour Energy poles:

- Design drawings and schematic diagram showing that the EV Charger installation complies with the requirements of the Service & Installation Rules of NSW and AS/NZS 3000,
- a suitable evaluation of the potential impacts on Endeavour Energy’s network.

If any modifications are made to the installation, the CPO shall inform Endeavour Energy immediately for re-approval.

5.3 Use of elevated work platforms

Elevated work platforms (EWPs) to be used for work on or near Endeavour Energy’s assets must comply with Endeavour Energy’s Electrical Safety Rules and be operated by Authorised personnel.

All EWPs, cranes, plant, vehicles, individual’s tools and equipment used on or near Endeavour Energy’s electrical network must comply with the WorkCover, Work Near Overhead Power Lines Code of Practice 2006.

5.4 Safe approach distances

All conductors, including insulated/covered conductors, must be treated as live, and the safe approach distances in the Endeavour Energy Electrical Safety Rules (ESR) must be maintained. For full details of safe working distances, refer to ESR.

5.5 Structure suitability

Endeavour Energy retains the right to use its structures for the purpose of the distribution of electricity, with the minimum cause of disruption, to its customers.

The suitability of an Endeavour Energy structure for EV Charger equipment will be assessed at the time of the connection application and will depend upon:

- the possible impact of the EV Charger equipment on Endeavour Energy's ability to perform its ongoing operation of its network,
- any future plans for augmentation, relocation and maintenance of Endeavour Energy's network, and
- the mechanical strength of the structure and the proposed additional loading due to the EV Charger equipment. Assessment requirements are outlined in clause 5.6.

In addition to the above, some sites may have further restrictions and limitations due to unavoidable emergency outages - higher voltage and higher power capacity sites tend to be more critical (refer clause 5.6.6).

The CPO's application shall include consideration of a voltage rise at the structure and the impact on their asset and staff.

Any future corrective action required on the pole footing, due to pole movement that has been established as caused by the installation of an EV Charger equipment, shall be carried out at the CPO's expense.

5.6 Design requirements

5.6.1 Pole loading assessment

An onsite pole condition and loading assessment may be used for each EV Charger installation proposed by the CPO provided the following nominal requirements are fulfilled:

a) The EV Charger unit shall be no larger than the dimensions submitted in the proposal.
b) The EV Charger unit shall be nominally installed between 800mm and 2400mm above ground level.
c) The residual structural capacity of the timber pole is not less than 65%.

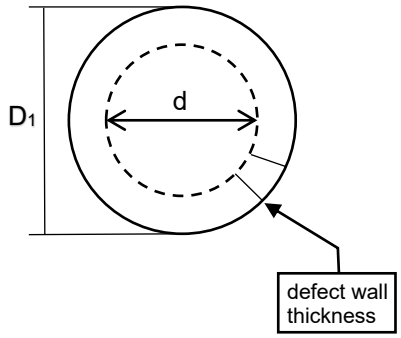
Design submission using this method must include evidence of conducting the onsite pole loading assessment, and all input parameters and output results. General steps include, but are not limited to:

1) Determine additional pole load due to attachment of EV Charger.
2) Attend to site and inspect/test pole for defects such as cavities.
3) Measure groundline diameter and wall thickness.
4) Determine residual structural capacity.

Where nominal requirements are not fulfilled then a full detailed overhead design is required for each site.

5.6.1.1 Calculation of residual strength

The residual strength of a timber pole may be calculated using the following formula:



$$S = \frac{D_1^4 - d^4}{D_0^3 \times D_1} \times 100$$

Where:

S – residual strength of the pole as percentage of original strength

D_0 – nominal groundline diameter of new pole. Refer to ETS 0052.

D_1 – measured diameter at groundline

d – diameter at groundline less defect.

Formula:

$$d = D_1 - (defect\ wall\ thickness \times 2)$$

In absence of a pole disc, D_0 shall be estimated based on the nearest measured groundline diameter. Refer to ETS 0052.

5.6.1.2 Full detailed overhead design

Where the nominal requirements of clause 5.6.1 cannot be fulfilled, a full detailed overhead design, using software such as Neara and PLS-CAD, shall be conducted in accordance with MDI 0031. The design shall demonstrate the proposed loading must not exceed the applicable pole rating.

The following assets must be considered in the pole loading calculation:

- EV Charger unit (including MSB Cabinet).
- Electrical network conductors (reflecting existing on-site tensions).
- Electrical service conductors.
- Existing 3rd party attachments.
- The residual strength of the pole under assessment.

Note: For poles with a residual strength of approximately 50%, there is a high probability that the existing pole being assessed will require a nail/splint or be condemned in the short term. EV chargers must be removed when this occurs.

5.6.2 Pole condition

The condition of the pole must be inspected and verified to be suitable for attaching the EV Charger on the pole. Where the CPO or its representative has any concerns regarding the condition of a pole, a pole inspection can be arranged by contacting the Asset Protection Manager. Any drilling of a timber pole for assessing internal decay must only be carried out by inspectors authorised by Endeavour Energy.

5.6.3 Network capacity

The capacity of the local low voltage network to cope with the potential increase in demand due to this and subsequent EV Chargers within the local area will be assessed as a part of the connection of load application process. The submitted design must identify the expected impact on the distribution transformer and voltage drop impacts at extremities of all low voltage distributors from that distribution transformer.

5.6.4 Earthing requirements

It is the CPO's responsibility to design, install and maintain the earthing system of the EV Charger to adequately mitigate hazardous voltages and also direct current (DC) leaking or short-circuiting to network LV neutral.

If there is a network earthing installation on the pole, this earthing installation must not be tampered with by the EV charging installation. Adequate clearance to EV earth (if installed) as determined by an ASP must be maintained to network earthing installation.

EV Chargers shall not be installed on poles that have HV earths.

5.6.5 Easement

Where Endeavour Energy poles are located within an easement or where Endeavour Energy has the requisite statutory powers to access and maintain assets within a corridor, the CPO must obtain the required consent to enter and occupy the land.

5.6.6 Asset replacements, alterations or relocations

Where make ready or alteration works are required, as outlined in Section 5.9, the proposed works must be included in the design submitted to Endeavour Energy in accordance with Section 5.11.

5.6.7 Prohibited locations

EV Chargers shall not be installed on poles where the requirements of clauses 5.9.1 and 5.9.3 cannot be met, or where any of the following apply:

- on conductive structures such as concrete and steel poles (streetlight columns included)
- on transmission poles
- on HV poles with an earth down lead/cable
- on poles frequently visited for work by Endeavour Energy, as described below:
    - Pole-mounted substations
    - Pole-mounted capacitors banks
    - HV air break and load break switches and underslung links
    - HV auto reclosers and sectionalisers, and similar devices
    - Tee-off poles and underground to overhead (UGOH) connections, excluding services
- On nailed or condemned poles
- on stay or stayed poles
- where they are subject to damage from vehicles
- Any structure hosting other third-party equipment
- where the clearances specified in **Table 1** are not achievable.

5.6.8 Direction of pole mounted EV Charger

EV Chargers shall be mounted on the footpath side of the structure as indicated in Figure 1, provided the unit does not obstruct the following:

(i) vehicular, cyclist or pedestrian access to or from, or entry into, a building,
(ii) cyclist or pedestrian movement along a cycleway or footpath. The unit shall not reduce the width of the formed footpath to less than 1000mm.
(iii) the unit does not obstruct access to, or interfere with, a structure, device, fixture or equipment used for firefighting or fire protection, including a fire hydrant.

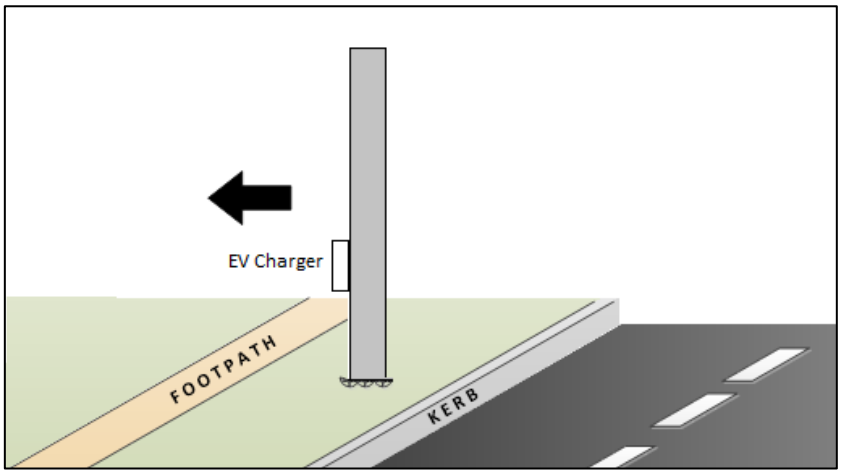


Figure 1: Direction of the pole mounted EV Charger

5.6.9 Attachment to structure

Clause 4.3 (T) of the Service and Installation Rules will be waived only in cases where Endeavour Energy approves the design and the customer installation provides local community benefit.

The EV Charger shall be attached to Endeavour Energy's poles mounted on a bracket fixed to the pole using coach screws driven to their full depth.

All proposed attachment methods shall be demonstrated not to impact the structural integrity of the pole it is being attached to.

The EV Charger and installation shall feature an anti-climb design. External components must be recessed or omitted to ensure no handholds or footholds are available, thereby prohibiting or significantly reducing the risk of unauthorised climbing on the unit or its support structure.

The design needs to implement appropriate measures to mitigate risk to public if the EV Charger is dislodged from the pole (i.e. at what height is likely any remaining exposed live apparatus on the pole and how is the risk to the general public managed).

5.7 Clearance requirements

5.7.1 Clearance from network mains

EV Chargers may be located as follows:

Voltage Level	Insulation	Location of EV Charger	Clearance from EV Charger Installation to the lowest circuit (See Note 1)
33kV - 132kV	Bare	Beneath	3000mm
11kV & 22kV	Bare, HVABC, CCT	Beneath	1800mm
LV and SL	Bare	Beneath	750mm
	LVABC + Insulated SL	Beneath	750mm
BCC or other Telco equipment	Insulated	Beneath	500mm

Table 1: Minimum clearances between network mains and EV Charger

Notes:

1 – The distances shown apply vertically on the pole.

5.7.1.1 Poles with multiple circuits

Where a pole has multiple circuits, the EV Charger shall be installed below the lowest circuit and only the clearance of this circuit, as indicated in **Table 1**, shall apply.

5.7.2 Communication hardware and EV Charger clearances

The EV Charger shall not be installed on poles with existing communications hardware.

5.7.3 Other clearances

The clearance to ground for EV Chargers shall be a minimum of 800mm to the bottom of the unit.

5.8 Construction requirements

5.8.1 Attachment on poles

Refer to Section 5.7 for clearance requirements.

EV Chargers shall be positioned on poles so as not to obscure or interfere with Endeavour Energy pole identification discs, pole identification numbers, UGOH cables, cable guards, conduits and other items or equipment installed on the pole.

5.8.1.1 Riser cables (UGOHs) and conduits

The maximum number of riser conduits permitted on an Endeavour Energy pole must be in accordance with **Table 2**.

Pole Type	Conduits/cables ≤ 70 mm	Conduits/cables > 70 mm
Line pole	3	1

Table 2: Maximum number of cables/conduits on a pole.

All electricity service cables are to be installed in accordance with the Service and Installation Rules of New South Wales, which includes the installation of flexible conduits and non-conductive mechanical protection (cable cover guards).

An approved cable cover guard (SAP material number 1000005947) shall be installed on the pole to provide mechanical protection over the service cable up to a height of 2500mm above ground level. The cable cover guard shall be secured to a wooden pole using galvanised coach bolts and washers.

The overall diameter of the mechanical protection and flexible conduits must be as small as practical to fit over the service cable and minimise the occupied space on the pole.

The CPO must install mechanical protection on Endeavour Energy UGOH cables in accordance with MCI 0005 – Overhead distribution construction standards manual, if not installed already, to prevent damage to these cables before the installation of any EV Charger equipment.

EV Charger installation and maintenance staff must maintain a clearance of 150mm from all cables with single insulation or covering.

5.8.2 Identification requirements

The CPO must clearly label the EV Charger unit at each pole. The signage shall be:

- Marked with up to a six (6) letter word or acronym identifying the owner of the EV Charger.
- Marked with the 24/7 emergency contact number.
- Fixed directly to the EV Charger unit.
- Suitably waterproof.

- After application, the label edges must be sealed with a suitable sealer.

5.8.3 Locking

A meter box lock is to be installed to the metering section of the EV charging unit. The lock shall be purchased from ARA Locksmiths and the CPO needs to purchase an *EM system lock* that is *keyed for the Endeavour Energy area*. This will ensure that an Endeavour Energy master key will operate the lock.

5.9 Make ready and alteration works

5.9.1 Defective service cables

Where it is anticipated that workers will work within 500 mm of service cables, the service defects outlined in **Table 3** require the CPO to carry out the corresponding remediation works at their own cost, by engaging suitably authorised personnel to complete the rectification works.

Defect	Required remedial action
Exposed live metal (Uninsulated split bolt connections between mains and aerial service cables)	Cover the exposed metal with a suitable insulating medium and a weatherproofing device.
Insulation on the service cables has deteriorated leading to exposed conductors	Report the defect to the Emergency and assistance hotline: 131 003. The appropriate Endeavour Energy depot to arrange the necessary replacement. *Note*: Service cable work within 500mm of a deteriorated service cable is not to be performed unless the defect is rectified and the insulation is repaired with no exposed apparatus.

Table 3: Remediation requirements for defective service cables and equipment.

5.9.2 Congestion on pole

Where the number of existing assets installed on the pole impairs the ability to install the EV Charger, the CPO can propose remediation works to simplify the congestion via a design. If the congestion is from many services, the services can be rearranged provided the standard Endeavour Energy notification/outage process is followed.

If the congestion on the pole can only be simplified by relocating assets, the proposed remediation work must be submitted to Endeavour Energy via the Contestable Works process, as outlined in Section 4.11.

5.9.3 Inadequate pole strength or condition

If the mechanical loadings from the attachment of the EV Charger unit exceed the pole rating, the pole will require replacement at the cost of the CPO. Likewise, any requirement to straighten a leaning pole prior to the attachment of the EV Charger unit will be the responsibility of the CPO.

Requests for such poles must be submitted to the Facilities Access Manager for approval before commencing the Contestable Works process, as outlined in Section 5.11.

The installation of an EV Charger onto the electrical network must utilise the existing poles. The installation of additional network poles, including stay poles, is not acceptable.

5.10 Other requirements

5.10.1 Record Keeping

The annual rental received by Endeavour Energy is determined from Endeavour Energy's network data and mapping records, which contain details of the EV Chargers attached to the network poles.

Endeavour Energy is to be informed when attachments occur to provide the correct rental assessment. In this respect, the CPO must provide a GIS layer of the proposed alteration/addition in accordance with SAD0002 – GISCAD design.

5.10.2 Removal of Endeavour Energy assets from pole

If Endeavour Energy removes Endeavour Energy electricity assets from a pole, such as for the purposes of undergrounding, the CPO must remove their equipment in a timely manner as required by Endeavour Energy.

5.10.3 Proposed future use of a pole

Endeavour Energy may contact the EV Charger applicant if it has any future proposed additional use or works, which the CPO must allow for when designing for the attachment of its EV Charger unit.

5.10.4 Defects found after the installation of EV Charger unit

Where Endeavour Energy has found that the installation of an EV Charger unit has led to or contributed to a defect, the CPO is responsible for the costs to remediate the construction to an acceptable level. Defects may include, but are not limited to:

- the pole leaning
- inadequate ground clearances
- inadequate clearance to Endeavour Energy assets
- installing materials and equipment not included on the Approved Materials List (AML)
- the equipment interferes with the electricity distribution function, or
- the pole is overloaded.

5.10.5 Future pole replacements and network alterations

The conditions for coordinating pole replacements, transfer of EV Charger unit to the new pole and relocation of infrastructure are outlined in the individual agreements between the CPO and Endeavour Energy. In general, Endeavour Energy staff are not permitted to interfere with EV Charger equipment and cabling. The CPO will need to make arrangements for the relocation of their assets where reasonable notice of the proposed works is given.

If the CPO fails to relocate the equipment within a reasonable time frame, Endeavour Energy may take any action deemed necessary to relocate the equipment. This may include engaging a contractor to conduct the works at the CPO's cost.

5.10.6 Vegetation management

It is the CPO's responsibility to determine if EV Charger units require a specific clearance to trees. Endeavour Energy has no commercial arrangement with CPOs to conduct tree trimming around their assets.

5.10.7 Aesthetics

CPOs may present the installation of EV Chargers as having no significant visual impact. Endeavour Energy is aware that its overhead electricity network may be implicated (by association) in any adverse community reaction to the attachment of EV Chargers. Accordingly, Endeavour Energy representatives involved in this exercise should strive to make the completed network as aesthetically acceptable as possible.

Endeavour Energy may influence this through prudence in the selection of the structure and assessment of make-ready requirements. Critical factors, including the location and EV Charger height, are to be given prime importance during this assessment.

5.11 Access and connection approval process

The proposed attachment of the EV Charger and any alteration works are to be included in the design and submitted to Endeavour Energy via the Facilities Access process. The proposed design will be submitted to the CNS at the design stage for processing applicable fees. Structure suitability and connection to the network will be assessed during the design approval process. Full details on each of these submissions will be outlined in relevant Customer Network Solutions processes.

The CPO is responsible for all costs associated with the design and construction of the remediation works.

5.12 Non-compliance to this standard

If any of the requirements detailed in this standard cannot be met, requests for dispensation may be submitted to the Asset Engineering Manager for review. The submission shall include:

- the completed dispensation request form FAM 0048
- supporting documentation that would allow adequate review of the request including but not limited to:
    - drawings clearly indicating the area of network associated with the dispensation request
    - sketches of the proposed dispensation/option that would not normally be shown on the design.
    - location photos.
    - acceptance test results, including any relevant previous test results.

6 Authorities and Responsibilities

Listed below are the positions or groups of positions that have specific authorities and responsibilities associated with this standard.

General Manager Future Grid & Asset Management has the authority and responsibility for approving this standard:

- approving major changes to this standard in accordance with Table 4 of GAM 0001;
- making all decisions concerning compliance with this standard;
- delegating any of these authorities and responsibilities to the Head of Asset Management and Digital.

Head of Asset Management & Digital has the delegated authority and responsibility for:

- approving minor changes to this standard in accordance with Table 4 of GAM 0001;
- making recommendations to the General Manager Future Grid & Asset Management for major changes in respect to this standard.

Asset Engineering Manager has the authority and responsibility for:

- reviewing this standard for suitability in Endeavour Energy's network;
- endorsing and making recommendations to the Head of Asset Management & Digital based on industry best practice;
- managing dispensation requests for variations to requirements of this standard.

Head of Customer Network Solutions has the authority and responsibility for:

- overseeing that all designs submitted conform to the requirements of this standard.
- assessment and processing of access and connection applications, including execution of Site Nomination Agreement (SNA) and issuance of Permission to Connect (PTC).

Manager Future Grid Growth is responsible for overseeing negotiation of the facilities access agreement with the CPOs.

The **Asset Protection Manager** has the authority and responsibility for organising the inspection of a pole at the request of a third party.

Endeavour Energy

POWER together